UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00339

June 27, 2003

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Quarry (Grande Ronde River) Bridges Replacement Project, Union County, Oregon

Dear Mr. Patron:

Enclosed is the biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Quarry Bridges Replacement Project in Union County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River spring/summer chinook salmon (*Onocorhynchus tshawytscha*), and Snake River Basin steelhead (*O. mykiss*), or destroy or adversely modify designated critical habitats. This determination is limited to an analysis of the proposed action as described by the Oregon Department of Transportation (ODOT), and does not apply to any design that the contractor may propose that diverges from this proposed action, which would require reinitiation of consultation by the FHWA. As required by section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the potential for incidental take associated with these actions.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR part 600).

If you have any questions regarding this consultation, please contact Tom Loynes of my staff in the Oregon Habitat Branch at 503.231.6892.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Nick Testa, ODOT
Shelly Schmidt, ODOT
Randy Reeve, ODFW
Diana Hwang, USFWS
Jon Adkins, Mason, Bruce and Girard, Inc.

Endangered Species Act - Section 7 Consultation
Biological Opinion

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Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Quarry (Grande Ronde River) Bridges Replacement Project
Union County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	June 27, 2003
Issued by:	For Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2003/00339**

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1. INTRODUCTION

1.1 Consultation History and Background

On April 3, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Quarry Bridges Replacement Project proposed by the Oregon Department of Transportation (ODOT). The Quarry Bridges Replacement Project will replace two sets of west- and east-bound bridges on Interstate 84 (I-84) over the Grande Ronde River, with four new, wider structures. On-site meetings were held with ODOT, Max Kuney Construction, U.S. Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), Mason, Bruce and Girard, Inc., and NOAA Fisheries on February 6, 2003, and March 3, 2003. These meetings were held to discuss details of the construction, in-water work concerns, and demolition of the existing bridges. The bridges are 13 kilometers (km) west of LaGrande in Union County, Oregon. This biological opinion (Opinion) is based on the information presented in the BA and discussions with the project proponent.

The FHWA determined that both the Snake River (SR) spring/summer-run chinook salmon (*Oncorhynchus tshawytscha*) and the SR Basin steelhead (*O. mykiss*) are reasonably likely to occur within the project area of the Quarry Bridges Replacement Project. The SR spring/summer-run chinook salmon were listed as threatened under the ESA on April 22, 1992 (57 FR 14653), critical habitat was designated on December 28, 1993 (58 FR 68543), and protective regulations were issued under section 4(d) of the ESA on April 22, 1992 (57 FR 14653). Designated critical habitat includes all river reaches accessible to listed chinook in all river reaches in the Columbia River from a straight line connecting the west end of the Clatsop Jetty and the west end of the Peacock Jetty and including all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and the Snake Rivers and all Snake River reaches from the confluence of the Columbia River upstream to the Hells Canyon dam. Excluded from critical habitat are those reaches upstream of impassible natural barriers (*i.e.*, natural waterfalls in existence for at least several hundred years), and Dworshak and Hells Canyon dams. SR Basin steelhead were listed as threatened under the ESA on August 18, 1997 (62 FR 43937), and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

This Opinion is based on the information presented in the BA and developed through correspondence and site visits on January 28, 2003, February 6, 2003, February 22, 2003, March 3, 2003, April 1, 2003, and June 3, 2003. The objective of this Opinion is to determine whether the actions to demolish and remove the existing structures and construct the new structure are likely to jeopardize the continued existence of the SR spring/summer-run chinook salmon, and the SR Basin steelhead, or destroy or adversely modify their critical habitats, and to explain why NOAA Fisheries believes the proposed action will adversely affect essential fish habitat (EFH). This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402. The FHWA, using methods described in *Making*

ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NOAA Fisheries 1996), determined that the proposed actions are likely to adversely affect SR spring/summer-run chinook salmon and SR Basin steelhead.

1.2 Proposed Actions

The proposed actions analyzed in this Opinion are described in the Quarry Bridges Replacement Project BA. Measures will be taken by ODOT to avoid and minimize environmental impacts at both project sites. The BA outlines restrictions (Quarry Bridges Project, pp. 46-55) that apply to the project, providing direction as to what would constitute an acceptable design. These restrictions and specifications deal with bridge demolition, erosion control, vegetation removal, planting, isolation of work areas, dealing with chemical contamination, access roads, staging and re-fueling.

Replacement of the Upper and Lower Quarry bridges will occur concurrently. Construction during the first season will encompass replacement of the east-bound (EB) bridges in 2003, followed by the west-bound (WB) bridges in 2004. Major elements of the project will include demolition of the existing bridges, installation of temporary work bridges, new bridge construction, roadway approach modifications and other roadway work, habitat enhancement activities, and site restoration. Construction of all four bridges will follow this sequence: (1) Isolate drilled shaft locations; (2) conduct fish salvage and dewatering; (3) install work bridge; (4) drill shafts for new bridge columns; (5) place columns and pier caps; (6) set girders and pour the deck; (7) complete mechanically stabilized earth (MSE) walls; and (8) pour the concrete guardrail barrier.

1.2.1 Temporary Access Roads and Staging

Access to all areas under the existing bridges will be required and existing roadways will be used to the extent possible. Temporary access roads will be required in certain locations within the action area described in the BA. Temporary access roads within 45 meters (m) of waterways or wetlands will be constructed so as to prevent excessive disturbance and compaction using clean aggregate placed on top of geotextile fabric. After construction is complete, the aggregate and geotextile will be removed and the site restored.

After demolition of the westernmost bridge spans, a temporary access road will enter the area under the west end of the Upper Quarry Bridges for bent removal within the footprints of the existing structures, thereby minimizing disturbance to vegetated ground.

An existing paved road on the east bank of the Grande Ronde River will be used to access the Lower Quarry Bridges. Access to this end of the bridges will require construction of short (approximately 5 m long) spurs to the areas under the bridges to facilitate removal of demolition debris. Temporary fill will be added behind the existing bents to provide temporary access to proposed debris containment platforms. This area is largely above the ordinary high water mark

(OHW), and is expected to be dry during construction. However, if any river flow is present it will be diverted to allow isolation of the area behind the bent.

Access to the western end of the Lower Quarry Bridges will require construction of a temporary stream crossing and improvement of an existing access road between the western river bank and the Union Pacific Railroad (UPRR). The temporary stream crossing will extend across the river, approximately 250 m north of the bridges, and will consist of a single-span steel deck resting on concrete abutments set below the OHW, and outside the wetted channel. The existing access road on the west bank of the river is an approximately 215 m long abandoned roadbed leading up to the existing UPRR maintenance road. The access road crossing and temporary fill will be removed before the end of the in-water work period (October 15) (ODFW 2000).

Another access road will provide access to the western end of the Lower Quarry Bridges. This road will be approximately 75 m long and will cross over the UPRR tracks and connect to the UPRR maintenance road. Approximately 37 Ponderosa pine trees (*Pinus ponderosa*) will be removed for construction of this temporary access road which represents approximately half of the trees to be removed for the entire project. Of the 19 riparian trees being removed, the majority of them are less than 200 mm (diameter at breast height) dbh with a range of 50 mm to 400 mm dbh.

Equipment and materials actively being used during construction activities will be staged at the bridge ends and on portions of the existing highway that will be closed to traffic during construction. Materials and equipment not in use will be stored in the cleared area associated with the Oro Dell Quarry. This site is approximately 45 m from the OHW and is unvegetated and somewhat compacted as a result of previous quarry operations.

Equipment fueling and maintenance will be contracted out and less than 200 gallons of fuel will be stored on-site in fuel storage containers and kept in a portion of the staging area designed for fuel spill containment.

1.2.2 Bridge Demolition

The existing bridge structures are cast-in-place box girder bridges, which makes these types of bridges unstable when a portion is removed and does not allow the typical saw cutting and lifting associated with most demolition. Demolition of the existing bridges will take approximately eight weeks during each construction season to complete.

The construction contractor will use railroad flatcars and/or steel beams and decking spanning the wetted channel to catch falling debris. These structures or beams will rest directly on the streambed, across the wetted channel at the Lower Quarry site, and will span the wetted channel at the Upper Quarry site, potentially requiring only minor flow diversion at either location. Sideboards will be constructed of plywood or steel and installed around the containment platforms to prevent shattered debris from flying off of the platforms into the river or adjacent

riparian/wetland areas. ODFW expects that enough voids will exist under the debris containment platforms allowing water to pass through the work area unobstructed.

Above the wetted channel, a platform will be constructed using two layers of rock encapsulated in geotextile fabric. The first layer will consist of fabric laid on the existing cobble substrate and covered with a 0.3-m deep layer of clean river rock, 25-40 millimeters (mm) in diameter. The fabric will be wrapped around the upper surface of the rock layer to encapsulate the rock with a second layer of fabric laid over the encapsulated clean river rock and covered with a second layer of rock. The second rock layer will include fine material to form a solid base to serve as an access road and debris containment pad for the bridge span between Bents 2 and 3. The second rock layer will be partially encapsulated with geotextile fabric, leaving only the top surface of the rock layer exposed for equipment travel. Concrete barriers will be used to provide additional containment around the wrapped rock layers isolating the area and minimizing the chance for debris and fill materials to enter the river channel.

Bridge spans directly above the OHW will be demolished using hoe rams and crushers and dropped in pieces onto the debris containment platforms. Following demolition of the bridge spans over the river, the containment platforms will be removed ensuring that the streambed remains relatively undisturbed. Bridge spans outside the OHW will be demolished and allowed to fall onto the ground, loaded into trucks, and then removed and disposed of at an upland site.

Following demolition of the bridge deck, support structures will be removed and bridge bents will be cut off a minimum of 0.6 m below the streambed elevation and covered with native streambed materials.

1.2.3 Temporary Work Bridges

Three temporary work bridges will be erected to facilitate construction of the new bridges: one on the south side of the existing EB Upper Quarry Bridge, and one at each of the EB and WB Lower Quarry bridges. Work bridges will be modular, consisting of several 6.7-m x 7.3-m spans supported on two-pile bents.

The EB Upper Quarry temporary bridge will be approximately 122 m long by 7 m wide and will have two platform extensions to the north for crane support. This work bridge will be supported on steel pipe pilings, approximately 40 of which will be below the OHW. The pilings will be driven into the cobble substrate resting on the bedrock. Concrete leveling pads may be needed where the cobble layer is too shallow or bedrock is exposed, but this would not be common. At least 0.6 m of cobble substrate is necessary to drive pile without the need for a concrete pad. The temporary bridge spans will be laid out to avoid placing pilings in the wetted channel, or at least to span the thalweg which is approximately 6 m wide at the bridge crossing. The EB Lower Quarry temporary bridge will be approximately 60 m long with a 18-m platform extending to the north (upriver) to support a crane needed to lift bridge girders into place. The work bridge will require 20 steel pipe piles below the OHW. The WB Lower Quarry temporary work bridge will

be approximately 67 m long with a 24-m platform extension to the south. The work bridge will require 27 steel pipe piles below the OHW.

The presence of a predominately bedrock substrate at the Upper and Lower Quarry Bridges precludes the driving of piles, therefore, temporary work bridge pilings will rest directly on the streambed. Pile supports for the work bridge will require a level surface in the streambed due to the heavy load they will support and it is anticipated that most or all pile locations will require some leveling of the streambed at each pile location. In some cases, it may only be necessary to chip away high spots in the bedrock, however, it will likely be necessary to prepare a level surface by removing some bedrock and pouring concrete "leveling pads" in the streambed and this may require some isolation and dewatering. Isolation would be accomplished by installing coffer dams. Concrete pads will be prepared by chipping out 1-m by 1-m by 75-mm holes in the existing bedrock and filling them with concrete and will include a "grab-hook" to facilitate quick removal of the temporary concrete pad by an excavator when the work bridge is removed.

All temporary work bridges and associated concrete pads will be removed before the end of the in-water work period. The WB Upper Quarry Bridge will not require construction of a temporary work bridge. The crane will operate from above the OHWM with appropriate containment measures in place.

1.2.4 Bridge Construction

The proposed EB Lower Quarry Bridge will be a 117.5-m long bridge comprised of three main spans 42.5 m, 39 m, and 36 m long measured west to east along the centerline. The superstructure will consist of 1,830-mm deep prestressed concrete Bulb-T girders with a 200-mm thick cast-in-place concrete deck and will be supported by a total of 4 bents with concrete caps and columns. The bridge will have an overall width of 13.42 m.

The proposed WB Lower Quarry Bridge will be a 129.4-m long bridge comprised of three main spans 46.4 m, 46 m, and 37 m long. The superstructure will consist of 2,135-mm deep prestressed concrete Bulb-T girders with a 200-mm-thick, cast-in-place concrete deck and will be supported by a total of four bents with concrete caps and columns. The bridge will have an overall width of 17.02 m.

For each bridge, the foundations will be piles for the two exterior bents and drilled shafts for the two interior bents. There will be one pier (bent 3) supported on two drilled shafts below the OHW and bent 2 will be at the top of the west river bank adjacent to the UPRR tracks. Bent 1 will be on the west side of the UPRR tracks and bent 4 will be near the bottom of the existing east slope adjacent to the existing Quarry access road. MSE walls will be constructed and placed at each end of each bridge just beyond the exterior Bents 1 and 4.

The new Lower Quarry Bridges will have fewer bents below the OHW than the existing bridges. Instead of 4 bents (12 columns) below the OHW, the new bridges will have only 2 bents (4 columns) below the OHW. However, the new bents will be closer to the river's mid-channel

than the existing bents. The factors that influenced the layout of the Lower Quarry Eastbound and Westbound Bridges are described below and on page 11 of the BA.

1. The layout of bridge spans and bents needed to provide the minimum horizontal clearance from the railroad tracks to the new bents as required by UPRR.
2. Bent 2 for each bridge was at the top of the bank to avoid construction on the steep bank between the railroad tracks and the river.
3. The number of bents below the OHW was reduced from the existing bridges. In addition, the number of columns per bent for the new structures is less than the existing bents.
4. Bent 3 for each bridge is to avoid the existing spread footings supporting the existing bents, thus avoiding additional disturbance required for their removal.
5. It was preferable to avoid locating any bents in the side channel along the eastern river bank due to the limited availability of this type of habitat within the action area and potential adverse impacts arising from pier placement in this type of aquatic habitat.
6. The span lengths for the bridges are close to the maximum length allowed for the girders being used. The girder depths, and therefore the maximum span lengths, were dictated by the minimum vertical clearance required over the railroad and restrictions to further raising the profile grade of the roadway.

Bridge substructures will be formed with steel column and steel cap forms. Concrete will be poured using stationary pumps placed above the OHW to keep concrete trucks away from the OHW, such that a potential spill or leak could be contained before reaching sensitive areas. Wood forms will be sealed with foam or similar material to prevent any leakage of wet concrete. Deck girders will be set with a crane operating from the work bridge. The pre-fabricated MSE retaining walls will be placed on-site and backfilled with graded material using heavy equipment. The drilled shafts will be attached into the bedrock that underlies the river and the bottom of the drilled shafts will be approximately 7 m to 9 m below the bottom of the streambed.

Due to the requirement of avoiding impacts to UPRR right of way and limitations on bridge span length, placement of Bent 3 below the OHW is unavoidable for this project. The alternatives for bridge span configuration allow for placement of Bent 3 near mid-channel or near the eastern edge of the channel. Due to the presence of a side channel along the eastern bank of the river under the Lower Quarry bridges, Bent 3 will be positioned closer to mid-channel to avoid permanently impacting the side channel.

1.2.5 Work Area Isolation and Fish Salvage

Before initiating demolition and construction activities within the wetted channel, proposed work areas will be isolated and dewatered. Work area isolation, dewatering, and fish salvage and handling activities will be monitored by trained and experienced biologist(s) and will be conducted during the in-water work period. Fish salvaged from work areas will be moved to an area of adequate habitat with good cover and no temperature issues.

Work area isolation and dewatering will be accomplished via several methods and fish passage will be maintained at all times. It is expected that some minor flow diversion will be necessary to dewater the locations of existing and proposed bridge piers. Wetted channel isolation for removal of existing piers and construction of new drilled shafts will be accomplished using sand bags and visqueen and if necessary, concrete traffic barriers will be used to support the sand bags. Water depth and the proximity of work areas to the river bank will be determining factors in the configuration of wetted channel isolation measures.

Pumps may be required to dewater the work isolation area. When pumps are required, the intake will be screened, operated, and installed following NOAA Fisheries screening criteria. The pump system will be monitored during periods of operation and will have back up systems in place.

1.2.6 Ground Disturbance and Vegetation Removal

Ground-disturbing activities will include construction of temporary access roads, roadway and bridge reconstruction, creation of staging areas, and activities related to construction of the proposed stormwater treatment facility. Estimated areas of ground disturbance for various project activities are presented in Table 1 in the BA.

In conjunction with the ground disturbance, vegetation removal will be necessary for some project activities including construction of the temporary access roads, temporary work bridges, and new bridge construction. Approximately 19 trees of various sizes will be removed from riparian areas, and approximately 53 trees will be removed from upland areas, outside the functional riparian zone. The majority of tree removal will occur around the Lower Quarry bridges, on upland slopes west of the UPRR tracks. However, some tree removal will occur within the riparian zone on the eastern riverbanks near both the Upper and Lower Quarry bridges. The species composition of the trees to be removed from the action area reflects the overall species assemblage in the action area including Ponderosa pine, black cottonwood (*Populus balsamifera*), and Douglas-fir (*Pseudotsuga menziesii*). All trees removed from functioning riparian areas will be replaced at a 2 to 1 ratio.

1.2.7 Site Restoration

All streambanks, soils, and vegetation disturbed by the project will be returned to pre-construction contours. Disturbed areas will be seeded and mulched with a permanent erosion control mix and disturbed riparian areas will be replanted with a diverse assemblage of native shrubs and trees. General site restoration measures have been developed as part of the Pollution Control Plan (PCP) and are included in Appendix D of the BA.

Replacement plantings will consist of approximately 20 Ponderosa pine, 5 Douglas-fir, and 16 black cottonwood trees. Replacement trees will be planted within the Oro Dell Quarry streambank stabilization site, along the river between the Upper and Lower Quarry bridges and onsite in areas in need of site restoration.

1.2.8 Union Pacific Railroad Pier Removal

When the UPRR constructed a new railroad crossing of the Grande Ronde River just downstream of the former crossing, the original piers and abutments were left standing. The abandoned structure consists of two end abutments and two mid-span piers. The two middle piers and eastern abutment are below the OHW with one of the piers resting in the center of the wetted channel. This pier is a concern because it is angled and directing flows toward the streambank causing streambank erosion.

As part of the proposed project, the two middle piers abandoned by the UPRR will be removed 0.6 m below the streambed elevation using a hoe-ram. A large scour-hole has developed around the mid-channel pier eliminating the need for excavation, however, the work area will need to be isolated. Removal of the UPRR piers will result in a reduction of 50 m^2 of in-water man-made structures from the action area.

1.2.9 Windrow Revetment

The windrow revetment would be constructed beside the proposed MSE wall along the south side of the EB lanes for approximately 74 m west of the bridge abutment on the west end of the EB bridge. The revetment would continue around the abutments on the west end of the EB bridge and along the MSE wall and abutment for the west end of the WB bridge. The revetment would also be constructed around the abutments on the east end of both the WB and EB Upper Quarry bridges. Construction of the revetments would occur concurrently with the work proposed for Upper Quarry bridges during Stage 1 of construction, which would begin in 2003.

The purpose of the revetments would be to protect the abutments and MSE walls from potential scour damage from the Grand Ronde River. The revetment has been proposed to protect the road and bridge structures. The proposed revetment consists of a trench along the top of bank, immediately adjacent to the wall and abutments. The trench is filled with riprap (Class 100 riprap). If the river began to scour and erode the bank, erosion would cause the riprap to be released and armor the bank, thereby stabilizing the area behind the revetment and preventing further erosion and potential damage to the bridges and highway.

An analysis of the potential scour depths that could occur along the proposed MSE wall was conducted using a 500-year recurrence design flow of 395 m^3/s in this analysis. The average estimated scour depth along the west MSE wall for the 500-year flow was estimated to be approximately 2.2 m.

The windrow revetment presents several advantages over the other methods. Bank armoring would involve placement of riprap along the bank from the MSE wall and abutments to the toe of slope and below the ordinary high water elevation and would require excavation of a large area between the structure and the river.

Windrow revetment construction would require excavation in the same area, but the excavation for the revetment would not be as deep as that required for constructing to bedrock and therefore would not impact as great an area as that required for sinking footings to bedrock. Also, once constructed, the windrow revetments would be covered with topsoil and revegetated. The revetment would be countersunk along the MSE wall and in front of the bridge abutments and filled with riprap and covered with topsoil and revegetated following construction.

The revetment would be approximately 3.4 m deep by 3.4 m wide and the overall footprint of the revetment would occupy approximately 741 m^2. Total volume of riprap required would be approximately 2,533 m^3, and the maximum area of disturbance for construction of the revetment would be approximately 1,482 m^2. However, the contractor would attempt to cut the sides of the trench for the revetment as steeply as the soil will allow. There would be no construction equipment or activities below the ordinary high water mark. As such, the area of disturbance may be considerably less than cited above. This area would be in addition to the areas of disturbance in section 3.4.5 of the BA.

The following process would be used to construct the revetment: Install silt fence between revetment excavation area and ordinary high water line, excavate trench for revetment rock, place rock in the trench up to the bottom of MSE wall/abutment footing elevation, construct the MSE retaining wall and bridge abutments, as wall is coming up continue placement of revetment rock to approximately 0.1 m below finished ground surface, cover revetment with topsoil and erosion control mat to stabilize and seed with approved seed mixture to revegetate area over revetment, consistent with planting and revegetation specifications documented in the BA.

It is estimated that one mature cottonwood tree (0.6m dbh) would be removed by the proposed revetment construction. The removed tree would be replaced at a 3-to-1 ratio, using container-grown black cottonwood seedlings consistent with planting specifications outlined in section 7 of the BA.

1.2.10 Stormwater Treatment

The proposed project will result in a net increase in new impervious surfaces (2,709 m^2) and has a design that includes stormwater treatment and detention facilities to control the quality and quantity of additional stormwater runoff for the life of the project. A stormwater treatment facility will be designed to treat 200% of the net new impervious area (5,440 m^2). The proposed facility will collect water from the EB Lower Quarry Bridge, portions of the I-84 EB and WB lanes, and a small area of the Hwy 30 off-ramp.

ODOT policy is to treat 2/3 of the 2-year, 24-hour storm and detain up to the 2-year event to minimize/eliminate impacts to stream hydrology and channels. However, ODOT drainage design standards require that 10-year flows be collected in roadway inlets. The proposed treatment facility will treat and detain flows up to the 10-year storm event. The volumes of a 2-year and 10-year event are 81 and 231 m^3/second(s), respectively.

Stormwater discharge will be directed to a treatment area (extended dry detention pond) near the eastern end of the project. This treatment facility will be designed to remove 70% of total suspended solids (TSS) and release flows over a 48-hour period. Due to the nature of the native soils in the area, it is anticipated that some of the storm volume will infiltrate into the ground. The facility will be trapezoidal in cross-section with a bottom area of approximately 195 m^2. The outfall structure will collect the stored water and discharge to the Grande Ronde River, above the OHW. The pond will be constructed with 0.3 m of freeboard and an emergency spillway. Runoff that is not captured in the detention pond will be routed off of the bridges and roadway so that runoff will be conveyed over at least 20 m of natural vegetation before entering the river and not be allowed to directly enter the river below.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information and Critical Habitat

Based on migratory timing, listed salmon or steelhead species may be present in the action area during the proposed bridge replacement projects. The proposed actions would occur within designated critical habitat for listed chinook salmon.

An action area is defined by NOAA Fisheries regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Direct affects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the river where actions described in this Opinion lead to additional activities or affect ecological functions contributing to habitat degradation.

Essential features of the adult and juvenile habitat for these species in the action area are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) cover/shelter, (6) riparian vegetation, (7) food, and (8) passage. The essential features that these proposed projects may affect are substrate, water quality, riparian vegetation, and food.

SR spring/summer-run chinook salmon migrate through the upper Grande Ronde River within the project vicinity between the months of February and July with spawning occurring in the upper reaches of the basin. Juveniles migrate downstream during late February through May. The Grande Ronde River within the proposed project area is primarily used by chinook as a migration corridor and possibly as a juvenile rearing area.

Adult SR Basin steelhead migrate through the upper Grande Ronde River within the project vicinity between the months of February and July and spawning in the upper reaches and tributaries. Juveniles migrate downstream during late February through May. Juvenile steelhead

may occur in the project area during the in-water work period, but in low numbers due to high summer water temperatures.

The proposed project will occur within the Grande Ronde River subbasin. The subbasin is in northeastern Oregon and southeastern Washington, and is bounded by the Blue Mountains, which rise to 2,300 m and the Wallowa Mountains, which rise to 3,050 m. The watershed contains two major river valleys, the Grande Ronde and the Wallowa, which drain a combined area of approximately 10,350 square kilometers (km^2), and ultimately flow into the Snake River (Clearwater 1993). Tributaries to the Grande Ronde River near the proposed project area include the ephemeral streams flowing out of Wilson Canyon and Bear Canyon. The Grande Ronde River-Snake River confluence is approximately 272 river kilometers (Rkm) downstream of the project site.

Land use in the Grande Ronde River watershed follows patterns of natural resource availability (Myers *et al.* 1998). Timber harvest is prevalent in the mountains, while livestock grazing is more common in the lowlands (Myers *et al.* 1998). Approximately 45% of the watershed is public land managed by the U.S. Forest Service (USFS) with some privately-owned land along streams on the valley floors (Clearwater 1993). Riparian vegetation throughout the watershed has been degraded by overgrazing, road building, timber harvest, and urban development (Busby *et al.* 1996). Prime steelhead spawning areas have been degraded by overgrazing in several parts of the Grande Ronde River watershed (Busby *et al.* 1996).

The proposed project is within the Blue Mountains ecoregion, which is characterized by a mix of older sedimentary and younger volcanic peaks (Myers *et al.* 1998). The higher elevations are vegetated by ponderosa pine, grand fir (*Abies grandis*), Douglas-fir, and Engelmann spruce (*Picea engelmannii*). The lower elevations are comprised primarily of sagebrush (*Artemisia spp.*), bluegrass (*Poa spp.*), and other grasses (Myers *et al.* 1998).

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the (1) Definition of the biological requirements and current status of the listed species, and (2) evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond

the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

Furthermore, NOAA Fisheries evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NOAA Fisheries must determine if habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NOAA Fisheries identifies those effects of the action that impair the function of any essential element of critical habitat. NOAA Fisheries then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NOAA Fisheries concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of SR spring/summer-run chinook salmon, SR Basin steelhead and UWR chinook salmon.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed chinook and steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the SR spring/summer-run chinook salmon and SR Basin steelhead for ESA protection and also considers new available data that is relevant to the determinations.

The relevant biological requirements are those necessary for ESA-listed salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration and rearing in the project area. The current status of the SR spring/summer-run chinook salmon and SR Basin steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

2.1.2.2 Environmental Baseline

The range-wide status of the SR spring/summer-run chinook salmon and SR Basin steelhead is described in Busby *et. al.* (1996) and Myers *et. al.* (1998). The identified actions will occur within the range of the SR spring/summer-run chinook salmon and SR Basin steelhead. The

direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activity includes the immediate watersheds where the bridge replacements will occur, the proposed mitigation sites and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term.

For the purposes of this Opinion, the action areas are the channel and adjacent riparian area from about 400 m upstream from the project and mitigation sites, and 400 m downstream. Temporary indirect impacts (temperature modification, disruption of primary productivity and food resources) and potential direct affects (sediment, pollutant discharge and hydraulics) to the Grande Ronde River will be caused by the in-water work and general riparian and bank disturbance within the project areas.

The dominant land use in the Grande Ronde River watershed is rural residential, private agriculture, and forestry. The Grande Ronde River watershed is unique because of its naturally turbid streams and high pH and alkalinity. The watershed is also water-deficient, primarily due to the seasonal pattern of rainfall and the demand for water for irrigation use. Various water quality monitoring within the Grande Ronde River watershed by Oregon Department of Environmental Quality (ODEQ) shows degraded water quality regarding temperatures, biological oxygen demand, dissolved oxygen, bacteria, nutrients, and pH levels (ODEQ 2002). ODEQ shows the Grande Ronde as water quality limited 303(d) for a number of parameters.

Based on the best available information regarding the current status of the SR spring/summer-run chinook salmon, and SR Basin steelhead, the population status, trends, genetics, and the poor environmental baseline conditions within the action areas, NOAA Fisheries concludes that the biological requirements of the SR spring/summer-run chinook salmon and SR Basin steelhead are not currently being met. Degraded habitat resulting from agricultural practices, forestry practices, road building, and residential construction, indicate many aquatic habitat indicators are not properly functioning within the Grande Ronde River. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of these species.

2.1.3 Analysis of Effects

2.1.3.1 Effects of Proposed Actions

The proposed actions have the potential to cause the following impacts to SR spring/summer-run chinook salmon and SR Basin steelhead:

Construction Equipment

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). To minimize the potential of pollutants entering the waterway, construction equipment, materials and refueling would be staged at least 45 m from the OHW.

Hardened Embankments

Impacts to waterways from installation of hardened embankments include simplification of stream channels, alteration of hydraulic processes, and prevention of natural channel adjustments (Spence *et al*. 1996). Moreover, embankment hardening may shift the erosion point either upstream or downstream of the project site and contribute to stream velocity acceleration. As amplified erosive forces attack different locations and landowners respond with more bank hardening, the river eventually attains a continuous fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by the diversity of ecological conditions at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bed load materials, and reduce flow velocity.

The most desirable method of bank protection is revegetation. However, revegetation alone can seldom stabilize banks steeper than 3:1 (horizontal:vertical) or areas of high velocity (USACE 1977). Although they are biologically less desirable, fixed structures provide the most reliable means of bank stability. The use of structural measures should be a last resort. Combining structural measures such as sloped riprap, vegetation, and large woody debris (LWD) is preferable to a structural solution without vegetation (USACE 1977). Where riprap is necessary the project design requires it to be buried under native streambank material to facilitate stream continuity and the growth of woody vegetation.

Sedimentation

Potential sedimentation impacts to listed salmonids from the proposed actions include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity level (Sigler *et al.* 1984, Gregory 1988), during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Scannell 1988). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1998).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser

1991). Because the potential for turbidity should be localized and brief, the probability of direct mortality is negligible.

Construction related effects necessary to complete the proposed action will be minimized by implementation of effective erosion and pollution control measures and completing all work within the OHW during the ODFW recommended in-water work period (July 1 to October 15). In addition, all work will be isolated from the wetted channel. No construction or construction equipment will enter the wetted channel, except for installation of coffer dams, as a result of the proposed action.

Water Quality Stormwater Effects

Due to an increase of new impervious surface, the potential exists for an increase in runoff from the proposed new impervious surface at both proposed project sites. However, the proposed stormwater runoff treatment criteria will more than offset any potential adverse effects to water quality as a result of the proposed action. The proposed stormwater treatment criteria would require all stormwater to be routed to the end of the bridges where it would be treated in a manner that would not result in a change in the hydraulic conditions or an increase of pollutants to the Grande Ronde River.

Stream Hydraulics

The placement of fill material below the OHW would typically result in simplification of habitat and increased stream velocities under the structure. However, based on new design technologies allowing greater span lengths in bridges, the new bridges are likely to have fewer bents within the OHW. Fewer bents within the OHW would result in a net decrease of fill within the OHW cross section. Bridge approach fill within the 100-year floodplain can result in a restriction of the floodway causing increased stream velocities during high flows. The increased velocities can facilitate stream degradation downstream to unknown distances. The degradation process begins with increased channel down-cutting and bank erosion. This can result in an increase of fine sediments within the channel substrate as well as a decrease in width to depth ratios. The instream habitat is simplified due to fewer pools and complex cover (Rosgen 1996). Stream hydraulics should show a benefit over what is there presently.

Riparian Vegetation

Woody vegetation that would be cleared at the Quarry Bridges Project would include approximately 10 small Ponderosa pines, one small Douglas-fir, and 9 Black cottonwoods ranging between 50 and 400 millimeters dbh. However, during construction, erosion control measures and post-project riparian plantings would reduce erosion during construction and restore woody vegetation. All trees removed from functioning riparian areas will be replaced at a 2 to 1 ratio. All impacted areas would be restored to pre-work conditions. Damaged streambanks would be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation. All exposed soil surfaces, including construction access roads and associated staging areas, would be stabilized mulch, native herbaceous seeding, and native woody vegetation. Areas requiring revegetation would be replanted between October 15 and

April 15. The riparian plantings would provide bank stabilization, shading, and increase the potential for insect production.

Work Area Isolation and Fish Removal

Bridge bent construction and removal will likely require work area isolation from the flowing water. Fish removal activities would be in accordance with NOAA Fisheries fish handling guidelines (NOAA Fisheries 2000). Any listed fish removed from the isolated work area would experience high stress with the possibility of up to a 5% delayed mortality rate depending on rescue method. Work area isolation can result in a loss of aquatic invertebrates due to dewatering areas within the wetted channel. In addition, sediment laden water created within isolated work areas could escape, resulting in impacts to the aquatic environment downstream of the project site.

The adverse effects of these activities on SR spring/summer-run chinook salmon and SR Basin steelhead and riparian and aquatic habitats would be avoided or minimized by carrying out construction methods and approaches described in the BA, provided the contractor follows the proposed design baselines. These include erosion and sediment control, stormwater treatment, in-water work restrictions, material and vehicle staging restrictions, and work area isolation and fish salvage.

2.1.3.2 Effects on Critical Habitat

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for SR spring/summer-run chinook salmon consists of all waterways below naturally-impassable barriers including the project areas. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter. Effects on critical habitat from the proposed action are included in the effects description above.

2.1.3.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation". The action area for the Quarry Bridges Replacement Project has been defined as the Grande Ronde River channel and adjacent riparian area from 400 m upstream and downstream from the construction and mitigation site. Many actions occur within the Grande Ronde watershed, within which the actions areas are found.

Non-Federal activities within the action areas are expected to increase with a projected 34% increase in human population over the next 25 years in Oregon. Thus NOAA Fisheries assumes that future private and state actions will continue within the action areas, but at increasingly

higher levels as population density increases. NOAA Fisheries assumes that future permitted projects in the Grande Ronde River watersheds will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

2.1.4 Conclusion

NOAA Fisheries has determined that, when the effects of the FHWA's proposed actions (funding the replacement of the Quarry Bridges) are added to the environmental baselines and cumulative effects occurring in the action areas, they are not likely to jeopardize the continued existence of the SR spring/summer-run chinook salmon and SR Basin steelhead, or cause adverse modification or destruction of designated critical habitat. This determination is limited to an analysis of the baseline design guidelines as developed by ODOT, and does not apply to any design that the contractor may propose that diverges from those design guidelines. Designs that would diverge from the ODOT developed guidelines are not covered by this Opinion and would require reinitiation of consultation by the FHWA.

The conclusion for the proposed action was based on the following considerations: (1) All in-water work and other construction activities within the OHW will take place according to Oregon guidelines for timing of in-water work to protect fish and wildlife resources, except as noted in this Opinion; (2) work area isolation (including use of NOAA Fisheries' guidelines for proper fish handling) and the conservation measures outlined in the BAs will be in place to avoid or minimize adverse affects to water quality; (3) potential flow effects of increased impervious area will be avoided or minimized by water quality treatment and detention before being released into any waterway; (4) trees cleared for construction of the new bridge will be replaced with new riparian plantings; (5) streambanks and riparian areas disturbed by new construction and in the area uncovered by removal of the old bridge will be planted with native woody vegetation; and (6) the proposed action is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or
(4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of Snake River spring/summer-run chinook, Snake River Basin steelhead because of detrimental effects from sediment pulses and increased temperature levels (non-lethal) and the slight possibility of juvenile presence in the vicinity of the project site during in-water work. NOAA Fisheries expects the possibility exists for incidental take of up to 50 juvenile SR spring/summer-run chinook salmon and 50 juvenile SR Basin steelhead during work area isolation and handling of fish over the two-year constuction period. Take resulting from the effects of other project actions covered by this Opinion is largely unquantifiable in the short term and not expected to be measureable in the long term. The extent of take is limited to the action areas.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Quarry Bridges Replacement Project BA includes a set of "conservation measures" designed to minimize take of listed species. Specific measures for in-water and bank work, clearing and grubbing, bridge removal, erosion control, hazardous materials, and site-specific conservation and habitat remediation measures are included as part of these terms and conditions by reference.

NOAA Fisheries believes that the following reasonable and prudent measures along with conservation measures described in the BAs are necessary and appropriate to minimize the likelihood of take of listed fish resulting from implementation of this Opinion. These reasonable and prudent measures would also minimize adverse effects to designated critical habitat.

The FHWA shall:

1. Minimize the likelihood of incidental take of construction activities by limiting the time of in-water work as necessary to avoid harming vulnerable salmon life stages, including migration and rearing.

2. Minimize the likelihood of incidental take from in-water work by ensuring that work within the wetted channel is isolated from flowing water.

3. Minimize the amount and extent of incidental take from construction activities in or near the river through development and implementation of effective erosion and pollution control measures throughout the area of disturbance and for the life of the project.

4. Minimize the amount and extent of take from loss of instream habitat and impacts to critical habitat by implementing measures to minimize impacts to riparian and instream habitat, or where impacts are unavoidable, to replace or restore lost riparian and instream functions.

5. Minimize the amount and extent of take from stormwater impacts and altered stream hydraulics by implementing measures to treat water and limit fill within the 100-year floodplain.

6. Ensure effectiveness of implementation of the reasonable and prudent measures, all fish handling, erosion control measures, and plantings for site restoration through monitoring and evaluation both during and following construction.

2.2.3 Terms and Conditions

1. To implement reasonable and prudent measure #1 (in-water timing and minimizing the extent of in-water work), the FHWA shall ensure:

    a. Construction impacts will be confined to the minimum area necessary to complete the project.

i. Survey and mark the ordinary high water mark at the project site before commencement of work to delineate the permitted work area.
ii. All work within the active channel that could potentially contribute sediment or toxicants to downstream fish-bearing systems will be completed within the ODFW-approved in-water work period except that, in 2003, work may degin on June 15.[1]

b. Extensions of the in-water work period, including those for work outside the wetted perimeter of the stream but below the ordinary high water mark, must be pre-approved in writing by biologists from NOAA Fisheries.

c. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

2. To implement reasonable and prudent measure #2 (isolation of in-water work area and proper fish handling methods), the FHWA shall ensure that:

a. During in-water work (work within the ordinary high water mark) if the project involves either significant channel disturbance or use of equipment within the wetted channel, the work area shall be well isolated from the active flowing stream within a cofferdam (made out of sand bags, sheet pilings, inflatable bags, *etc.*) or similar structure, to minimize the potential for sediment entrainment. Furthermore, no ground or substrate disturbing action will occur within the ordinary high water mark 90 m upstream of potential spawning habitat as measured at the thalweg without isolation of the work area from flowing waters. After the coffer dam is in place, any fish trapped in the isolation pool will be removed by a permitted ODOT and/or ODFW biologist before de-watering, using NOAA Fisheries guidelines (NOAA Fisheries 2000).

b. Any water intake structure authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries fish screen criteria.
i. Water pumped from the work isolation area will be discharged into an upland area providing over-ground flow before returning to the creek. Discharge will occur so that it does not cause erosion.
ii. Discharges into potential fish spawning areas or areas with submerged vegetation are prohibited.

c. <u>Fish Salvage</u>
i. Before, and intermittently during, pumping attempts, efforts will be made to salvage and release fish from the work isolation area as is prudent to minimize risk of injury. If the fish salvaging aspect of this project requires

[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish)(http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

the use of seine equipment to capture fish, it must be accomplished as follows:

(1) Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

(2) ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary, to prevent the added stress of an out-of-water transfer.

(3) Seined fish must be released as near as possible to capture sites.

(4) The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.

(5) The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.

(6) The applicant must allow NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.

(7) A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers; the means of fish removal; the number of fish removed by species; the condition of all fish released, and any incidence of observed injury or mortality.

ii. If the fish-salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NOAA Fisheries 1998):

(1) Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.

(2) Equipment must be in good working condition. Operators must go through the manufacturer’s preseason checks, adhere to all provisions, and record major maintenance work in a log.

(3) A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader’s experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training must occur before an inexperienced

crew begins any electrofishing; it must also be conducted in waters that do not contain listed fish.

(4) Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

(5) Direct current (DC) must be used at all times.

(6) Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. *In general*, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

(7) The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

(8) The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

(9) Crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

(10) Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

(11) The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

d. Fish Passage. Full passage shall be provided for both adult and juvenile forms of salmonid species throughout the construction period.

3. To implement reasonable and prudent measure #3 (erosion and pollution control), the FHWA will ensure that:

a. The Contractor will develop and implement a site-specific spill prevention, containment, and control plan (SPCCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this SPCCP. The plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
    i. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
    ii. Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
    iii. A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
    iv. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
b. Construction discharge water. All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:
    i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.
    ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4 feet per second.
    iii. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 90 m upstream of spawning areas or areas with marine submerged vegetation.
c. Material removed during excavation will only be placed in locations where it cannot enter streams, wetlands, or other waterbodies.
d. During excavation, native streambed materials will be stockpiled above the bankfull elevation for later use.
e. The following erosion and pollution control materials are onsite:
    i. A supply of erosion control materials (*e.g.*, silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.
    ii. An oil-absorbing, floating boom is available on-site during all phases of construction. The boom must be of sufficient length to span the wetted channel.

iii. All temporary erosion controls (*e.g.*, straw bales, silt fences) are in-place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in-place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

f. All exposed or disturbed areas will be stabilized to prevent erosion.
   i. Areas of bare soil within 45 m of waterways, wetlands or other sensitive areas will be stabilized by native seeding[2], mulching, and placement of erosion control blankets and mats, if applicable, but within 14 days of exposure.
   ii. All other areas will be stabilized quickly as reasonable, but within 14 days of exposure.
   iii. Seeding outside of the growing season will not be considered adequate nor a permanent stabilization.

g. All erosion control devices will be inspected during construction to ensure that they are working adequately.
   i. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites.
   ii. If inspection shows that the erosion controls are ineffective, work crews will be mobilized immediately, during working and off-hours, to make repairs, install replacements, or install additional controls as necessary.
   iii. Erosion control measures will be judged ineffective when turbidity plumes are evident in waters occupied by listed salmonids during any part of the year.

h. If soil erosion and sediment resulting from construction activities is not effectively controlled, ODOT will limit the amount of disturbed area to that which can be adequately controlled.

i. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 centimeters. Catch basins will be maintained so that no more than 15 centimeters of sediment depth accumulates within traps or sumps.

j. Sediment-laden water created by construction activity will be filtered before it leaves the right-of-way or enters a stream or other waterbody. Silt fences or other detention methods will be installed as close as reasonable to culvert outlets to reduce the amount of sediment entering aquatic systems.

k. Any hazardous materials spill will be reported to NOAA Fisheries, The Environmental Protection Agency, and the state of Oregon DEQ.

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[2]By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

i. In the event of a hazardous materials or petrochemical spill, immediate action shall be taken to recovery toxic materials from further impacting aquatic or riparian resources.
ii. In the event of a hazardous materials or petrochemical spill, a detailed description of the quantity, type, source, reason for the spill, and actions taken to recover materials will be documented. The documentation should include photographs.

l. The work bridges will have containment measures in place that minimizes any potential of petrochemicals or hazardous materials from entering the river.
i. The decking of the work bridge shall be constructed to self-contain petrochemicals and hazardous materials.
ii. No use of treated wood in contact with the waterway.
iii. The work bridges and the containment structure will be maintained to preserve containment integrity throughout the term of the project.

m. Refueling and hazardous materials
i. All staging and refueling shall occur at least 45 m from the ordinary high-water mark, except as stated below.
ii. No auxiliary fuel tanks will be stored within 45 m of the ordinary high-water mark.
iii. No hazardous materials will be stored on the work bridge.

4. To implement reasonable and prudent measure #4 (in-stream and riparian habitat loss), the FHWA will ensure that:

a. No riprap is used below the OHW except that placed for protection around MSE walls and bents placed below the surface of the streambed and subsequently covered with at least a one-foot layer of river run gravels.
b. The distance between existing bridge approach fill and the 100-year floodplain or OHW (whichever is closer to the existing fill) will not be reduced.
c. Boundaries of the clearing limits associated with site access and construction will be flagged to prevent ground disturbance of riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
d. During excavation, native streambed material will be stockpiled out of the two-year floodplain and for later use in back-filling the trenches used to construct the coffer dams.
e. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area.
f. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration.
g. Temporary access roads will be designed as follows:
i. Temporary access roads will not cross streams except when the wetted channel can be fully spanned.

ii. Alteration of existing native vegetation will be minimized in the construction, use, and maintenance of temporary access roads.
iii. Existing roadways or travel paths will be used whenever reasonable.
iv. Vehicles and machinery must cross riparian areas at right angles to the main channel wherever reasonable.
v. Temporary roads within 45 m of streams will avoid, minimize and mitigate soil disturbance and compaction by clearing vegetation to ground level and placing clean gravel over geotextile fabric.
vi. Vegetation should be pruned at ground level to allow future sprouting of native vegetation
vii. No treated wood may be used within or above the ordinary high water mark.
viii. All cleared areas will be revegetated once construction is completed as described below in term and condition #6.

h. All project operations, except efforts to minimize storm or high flow erosion, will cease under high flow conditions that may result in inundation of the immediate work area.

i. Measures will be taken to prevent any construction debris from falling within the boundaries of the ordinary high water mark, waterway or wetlands. Any material that falls within this area will be removed in a manner that has a minimum impact to the riparian area, streambed and water quality.

5. To implement reasonable and prudent measure # 5 (new impervious surface and stormwater management), the FHWA shall ensure that:

a. All stormwater runoff from any road or bridge built pursuant to a permit issued under this Opinion must be managed to ensure that it will not result in a change in the existing hydraulic conditions or an increase of pollutants to the receiving water.

b. Any project that will produce new surfaces or land use conversions that retard the entry of water into the soil must control the quantity and quality of the resulting stormwater runoff for the life of the project.

c. Permeable pavements should be installed and maintained for load-bearing surfaces other than bridge decking wherever soil, slope and traffic conditions allow.

d. Stormwater must be infiltrated or dispersed onsite to the maximum extent possible without causing flooding or erosion impacts.

e. When stormwater runoff must be discharged into a freshwater system, the following requirements apply.
i. The area must be drained by a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.
ii. Any erodible elements of this system must be adequately stabilized to prevent erosion.

iii. Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect.

iv. Runoff treatment facilities must be designed, built and maintained to collect runoff from the project site using the best available technology applicable to the site conditions. Treatment must be provided to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

6. To implement reasonable and prudent measure #6 (site restoration and mitigation), the FHWA shall ensure that:

a. Restoration goal. The goal of habitat improvement through on-site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

b. All damaged areas will be restored to pre-work conditions. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

c. All exposed soil surfaces, including construction access roads and associated staging areas, will be stabilized at finished grade with mulch, native herbaceous seeding, and native woody vegetation. Areas requiring revegetation must be replanted between October 15 and April 15 with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

d. No herbicide application will occur within 90 m of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

e. No surface application of fertilizer will be used within 15 m of any stream channel as part of this permitted action.

f. Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

g. Plantings will achieve 100% survival after 1 year, and 80% survival or 80% ground cover after 5 years (including both plantings and natural recruitment). If the success standard has not been achieved after 5 years, the applicant will submit an alternative plan to the FHWA. The alternative plan will address temporal loss of function for the 5 years.

h. Mitigation sites. Long-term adverse effects will be avoided or offset after taking all appropriate steps to avoid or minimize adverse effects.

i. Actions of concern. The following actions require compensation for long-term adverse effects: Construction of new impervious surfaces inside the

riparian buffer area[3] and other activities that prevent development of properly functioning condition of natural habitat processes.

ii. Mitigation at the proposed sites will be will be completed before the construction of the bridges is completed.

iii. Design review. The FHWA and NOAA Fisheries shall review and approve the proposed designs to avoid or offset long-term adverse affects considering the following:
   (1) Use of an ecosystem approach.
   (2) Habitat requirements of the affected species.
   (3) Productive capacity of the proposed construction and compensation site(s).
   (4) Timing of the construction and compensation actions.
   (5) Length of time necessary to achieve full functionality.
   (6) Likelihood of success.
   (7) Hydraulics at the site to determine the feasibility of the success of the mitigation.

iv. All plantings must occur before April 15 with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

v. No herbicide application will occur within 90 m of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

vi. No surface application of fertilizer will be used within 15 m of any stream channel as part of this permitted action.

vii. Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

viii. Provide the FHWA with a five-year plan to:
   (1) Inspect and, if necessary, replace failed plantings;
   (2) Control invasive non-native vegetation;
   (3) Protect plantings from wildlife damage and other harm.

ix. Provide the FHWA annual progress reports on the success of the mitigation sites.

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[3] For purposes of this Opinion only, "riparian buffer area" means land: (1)Within 150 feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100 feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an aboveground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50 feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an aboveground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. "Natural water" means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

i. All actions intended for streambank protection will also provide the greatest degree of natural stream and floodplain function achievable through application of an integrated, ecological approach.

j. During toe trench excavation and the placement of riprap, the work area is well-isolated from the active flowing stream within a coffer dam (constructed of sandbags, sheet pilings, inflatable bags, turbidity curtain, *etc.*), or a similar structure to minimize the potential for sediment entrainment..

k. Riprap design. Riprap will be constructed as follows, unless otherwise approved in writing by NOAA Fisheries.

(1) The trench excavated for the bank key above bankfull elevation must be filled with soil and topped with native vegetation.

(2) Rock must be individually placed without end dumping.

(3) Woody riparian planting must be included as a project component.

7. To implement reasonable and prudent measure #7 (monitoring and reporting), the FHWA shall ensure that:

a. Within 90 days of completing the construction projects and within 90 days of completing the mitigation projects, the FHWA/ODOT will submit a monitoring report to NOAA Fisheries describing the success in meeting their permit conditions. This report will consist of the following information:

i. Project identification

(1) Project name and project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.

(2) Starting and ending dates of work completed for this project;

(3) the FHWA contact person.

(4) Monitoring reports shall be submitted to:

National Marine Fisheries Service
Oregon Habitat Branch
Attn: 2003/00339
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

ii. Stormwater management plan. A report analyzing the impacts of the stormwater generated by the new impervious surface and how it impacts the hydrology and water quality downstream of the project site.

iii. Isolation of in-water work area. A report of any seine and release activity, including:

(1) The name and address of the supervisory fish biologist.

(2) Methods used to isolate the work area and minimize disturbances to ESA-listed species.

(3) Stream conditions before and following placement and removal of barriers.
(4) The means of fish removal.
(5) The number of fish removed by species.
(6) The location and condition of all fish released.
(7) Any incidence of observed injury or mortality.

iv. Pollution and erosion control. Copies of pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

v. Site restoration. Documentation of the following conditions:
(1) Finished grade slopes and elevations.
(2) Log and rock structure elevations, orientation, and anchoring, if any.
(3) Planting composition and density.
(4) A plan to inspect and, if necessary, replace failed planting and structures for five years.

vi. A narrative assessment of the project's effects on natural stream function.

vii. Photographic documentation of environmental conditions at the project site and compensatory mitigation site(s) (if any) before, during and after project completion.
(1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

viii. Other data. Additional project-specific data, as appropriate.
(1) Work cessation. Dates work cessation was required due to high flows.
(2) Fish screen. Compliance with NOAA Fisheries' fish screen criteria.
(3) Site preparation.
(a) Total cleared area – riparian and upland.
(b) Total new impervious area.

(4) Streambank protection.
(a) Completed screening matrices used to select treatments.
(b) Type and amount of materials used.
(c) Project size – one bank or two, width and linear feet.

(5) Site restoration.
   (a) Finished grade slopes and elevations.
   (b) Log and rock structure elevations, orientation, and anchoring (if any).
   (c) Planting composition and density.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: 'Waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity

on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Actions

The proposed actions are detailed in section 1.2. The action areas are defined as the channel and adjacent riparian area from about 400 m upstream from the project and mitigation sites and 400 m downstream. These areas have been designated as EFH for various life stages of coho and chinook salmon.

3.5 Effects of Proposed Action

As described in detail in section 2.1.3, Analysis of Effects, the proposed activities will result in detrimental short-term adverse effects to a variety of habitat parameters. These impacts include: Increases in turbidity, disturbance of the beds and banks of the river, removal of riparian vegetation and the potential for pollutants to enter the water.

3.6 Conclusion

After reviewing the current status of the listed species, the environmental baseline for the action areas, the effects of the proposed bridge replacements, and cumulative effects, NOAA Fisheries has determined that the Quarry Bridges Replacement Project, as proposed, will adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA in the BAs and all of the reasonable and prudent measures and terms and conditions contained in sections 2.2.2 and 2.2.3 of this Opinion are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 90 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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